



## Vehicle GPS Location System

# A Third More Power in Just 20% of the Space



Wide Input Voltage



High Efficiency



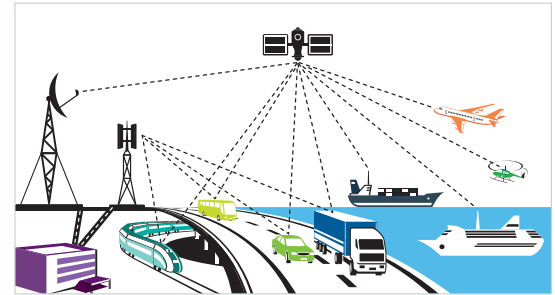
Small Size, Low Profile

### The Customer's Challenge

Vehicle GPS location systems are being used by companies of all sizes, local government and government agencies around the world to reduce operational costs, and provide control over their most remote assets.

To maximize the opportunities existing in this competitive growth market, one manufacturer was looking for ways to improve GPS accuracy and reliability, in one standard solution that could be used across different vehicles, with different vehicle battery systems. At the same time the company needed to reduce the system size to simplify installation. This represented a significant challenge for the design team given the 33% increase in power levels required and the limited space available on the PCB for the DC-DC converter.

The design team was also looking for creative ways of conserving the system's battery life, with the power solution's efficiency at light loading being identified as a potential area for improvement.



### The Solution

A high power density DCM DC-DC converter in a ChiP package was used to provide the 28V regulated supply. Measuring just 38.7 x 22.8 x 7.26mm it could be fitted directly onto the existing board, yet deliver the 160W of power needed. With a wide input range of 9 – 50V, this innovative product was able to operate reliably during cranking and across different vehicles.

[Link to Whiteboard »](#)



### The Results

High frequency zero-voltage switching (ZVS) topology enables the DCM converter to consistently deliver high efficiency across the full input line range, independent of battery system used. Flexible thermal management options, with very low top and bottom side thermal impedances, meant keeping the DC-DC converter cool was greatly simplified.

The small footprint of the DCM meant that the DC conversion element of the design required just 20% of the board space needed by the previous lower power full-brick solution, allowing the design team to meet their system case size objectives.

### Product Family Key Specifications

#### DCM DC-DC Converter Module

<b>Input Voltages</b>	9 – 50V <sub>DC</sub> 16 – 50V <sub>DC</sub> 18 – 36V <sub>DC</sub> 36 – 75V <sub>DC</sub> 120 – 420V <sub>DC</sub> 160 – 420V <sub>DC</sub> 200 – 420V <sub>DC</sub>
<b>Output Voltages</b>	3.3, 5, 12, 13.8, 15, 24, 28, 36, 48V
<b>Output Power</b>	4623 ChiP: Up to 600W 3623 ChiP: Up to 320W
<b>Efficiency</b>	Up to 93%
<b>Dimensions</b>	4623 ChiP: 47.91 x 22.8 x 7.21mm 3623 ChiP: 38.72 x 22.8 x 7.21mm